

New Hampshire Northcoast Railroad Improvements

I. Project Description

The condition of ties, surface and ballast has limited the ability of the New Hampshire Northcoast Railroad (NHN) to operate its freight service to capacity and expand freight service on its line. This project will upgrade, repair and make improvements to the track infrastructure including tie replacement, new ballast, resurfacing, and two grade crossings. This line currently provides freight service to a large sand and gravel operation in Ossipee, NH, transporting these materials to a transload in Rochester, NH and Boston; to propane distribution facilities along the rail line; and mixed freight to other shippers. The rail corridor connects with Pan Am Railways in Rollinsford, NH and to a rail-banked line owned by the state of New Hampshire in Ossipee. The railroad line closely parallels NH Route 16, the major north-south highway in eastern New Hampshire and a major route for both trucking and tourist travel to New Hampshire's lakes and mountains. Present volume on the line is approximately 4,000 railcars per year. Approximately two-thirds of the rail corridor is located outside of the Dover-Rochester urbanized area and is classified as rural.

The proposed project does not change the character or footprint of the existing railroad facility. The work involves upgrades and improvements to existing track structure to bring it to a state of good repair. The replacement of ties, the reballasting and resurfacing, and other improvements to the 42 miles of line will allow the track infrastructure to handle 286,000 pound rail cars and to meet the current and, when the economy improves, the increased demand of NHN's current and potential new customers. This project is a continuation of the millions of private and public dollars that have been invested since the 1980s in the track and grade crossings by NHN, the State of New Hampshire, the federal government and several of the municipalities on the rail corridor. The improvements will also allow for the expansion of its customer and freight capacity for many years to come.

The continuation and expansion of dependable freight service are crucial to the economic vitality of the overall region and to the recovery and expansion of the struggling economy of the northeast region of New Hampshire. This line also has historically moved over 500 hazardous material cars per year in propane (currently 13% of the NHN's business). These infrastructure improvements will ensure a continued safe track infrastructure, and will continue to provide a competitive rail transportation network for the region for energy, aggregate, wood and manufacturing products. Further, New Hampshire Northcoast is strategically located to connect to three ports (Port of Portsmouth, Portland and Boston at the Everett terminal owned by the parent company).

The ability to supply propane at a competitive price allows heating installers to market high efficiency, clean burning propane furnaces in this region to residents (including low income),

commercial and industrial businesses to replace oil furnaces. The new burners are beneficial to the region and the nation by reducing our dependence on foreign oil.

II. Project parties

The recipient is the New Hampshire Department of Transportation (NHDOT). The NHDOT has administered numerous Federal Railroad Administration grants in addition to its role as the state highway agency and the administrator of funds from the Federal Transit Administration. The NHDOT will contract with the New Hampshire Northcoast for the execution of this project. The NHN has owned and operated the rail line in the project area since acquiring it from the Boston and Maine Corporation to provide service to the large Ossipee Aggregates sand and gravel operation in the 1980s .

III. Grant Funds

Funding Sources: \$1,869,408 – Federal Tiger II Grant (80%)
 \$ 367,352 – New Hampshire Northcoast (20%)

Project components:

A. Supply/Install and Disposal 20,000 ties @ 78.00 ea.	1,560,000.00
B. Acton Ridge Road Grade Crossing	35,000.00
C. Resurface entire line including replacement of shoulder Ballast stone 42 miles (221,760.00 l.f.) @ \$1.00/l.f.	221,760.00
D. North of Engine House in Ossipee: repair 75 ft. washout, including box culvert, importing fill and new ties and tracks (wetlands not permitted)	325,000.00
E. Upgrade to siding standards – 0.7 track miles north of washout to existing loading dock	95,000.00
F. Somersworth Grade Crossing – Mill No. 1	<u>\$ 100,000.00</u>
 TOTAL PROJECTS	 \$2,336,760.00

IV. Selection Criteria

a. Long term outcomes

i. State of Good Repair

The condition of the NHN track infrastructure is as follows:

1. **Rail**

The rail consists of 136 lb. continuous welded rail that runs from Rollinsford to Rochester, a distance of approximately 10 miles. The rail from Rochester to Ossipee consists of 112 lb. jointed rail. The condition of the steel in both cases is generally good, but requires and is receiving continuous maintenance.

2. **Ties**

The condition of the railroad ties ranges from good to poor. The ties that are in poor condition have become critical and need to be replaced. This is approximately 20,000 ties and represents approximately 15% of the overall line.

3. **Ballast**

Over the past several years, the ballast condition has deteriorated because of erosion associated with several 100 year and 500 year storm events and the constant trespass of individuals on 4 wheel and ATV vehicles the length of the line. As a result, the ballast is in fair to poor condition and is in need of constant spot maintenance.

4. **Surface**

The resurfacing is related to the condition of the ties and ballast, and in many places is in fair to poor condition.

5. **Grade Crossings**

NHN has diligently rehabilitated and signalized grade crossings for the length of its line, the exception being Somersworth grade crossing, Mill No. 1, and the Acton Ridge Road grade crossing in Wakefield. Rehabilitation of these two grade crossings (and signalization of the Somersworth grade crossing) is critical to the continued safe operation of the railroad.

6. **Washout**

There is a 75 ft. wide, 15 year old washout north of the NHN engine house on the unused portion of the line that directly connects to the rail line owned by the State of New Hampshire.

7. **Track Condition North of the Washout**

These tracks are in generally very poor condition and will need rehabilitation to bring them to siding standards.

By supplying and installing 20,000 new ties (and disposing of the 20,000 old ties), the railroad will greatly improve the condition of the line. These ties are primarily located in the northern section of the railroad line (the rural area), and an upgrade of these ties is critical in assuring increased train capacity in terms of number of rail cars and overall tonnage. Also because of the steep grades associated with the track in the northern third of the rail line, the replacement of these ties is necessary in order for the train to have the ability to safely haul over the steep grade. Additionally, the reballasting and resurfacing of the entire line are critical to the viability of the rail line. Looking forward over the next five years, it will not be possible to increase freight volumes over 4,000 cars without the proposed improvements. With the proposed improvements the railroad will be able to return to its average volume of 6,500 to 7,500 cars a year and have the capability to double that volume. The repair of the washout is a necessary precursor for any potential of rail service to the North Country via the line owned by the State of New Hampshire that immediately abuts the New Hampshire Northcoast line. That segment of the former “Conway Branch” runs into Conway, NH, and could allow for connection via other rail lines owned by the State of New Hampshire to connect to the St. Lawrence & Atlantic Railroad. The NH Department of Transportation acquired the balance of the Conway Branch in part to provide a north-south rail corridor through the state of New Hampshire. This connectivity potential is one of the main reasons for these improvements and would open up tremendous potential for new customers for all the railroads in northern New England.

Without the proposed improvements of this project (new ties, new ballast, new surface, two rehabilitated grade crossings, repair of the washout and improvements to the line north of the engine house), it would not be possible to meet the anticipated demand of the current aggregate customer and be able to add new customers to the north. Also, the proposed improvements north of the washout to bring the line back up to siding standards will allow

the potential for new customers for an existing rail dock for either public or private delivery and open up a large parcel of land for a potential private siding for new customer(s).

The number of cars per train would be able to be increased after the proposed improvements. The first 8 miles of the track from Ossipee traveling south has extremely steep grades, which, depending on the speed restrictions on the trains, dramatically affects the tonnage and, therefore, the number of rail cars that can be pulled. Throughout the entire line, speed restrictions reduce not only the speed of the train, but also the tonnage that can be pulled. These improvements will allow for freight tonnage volumes to meet future anticipated demand. With these improvements there are substantial cost and time savings for existing and new rail customers because they will allow for each train to run more cars and more tonnage. Without the ability to use freight rail service the alternative for the aggregate customers would be trucking over the roads. Each rail car takes three 6-axle tractor trailers off the state and local highways, thus reducing greenhouse gas emissions and diesel fuel consumption, and saving tens of thousands of dollars in the wear and tear on and maintenance of the highway system. These improvements also assure the continued safe transport of propane. This results in environmental and highway infrastructure efficiencies as well as the added benefit of safety.

ii. Economic Competitiveness

Without the proposed improvements it would be impossible to meet the anticipated demand of the aggregate customers, and to add new customers to the north. Also, the proposed improvements north of the engine house to bring the line back up to siding standards will allow the potential of new customers for an existing rail dock for public or private delivery, and open up a large parcel of land for a potential private siding for new customer(s).

Maintaining the existing freight corridor from Ossipee to Rollinsford, NH is a critical component of NH DOT freight transportation strategy. Further, New Hampshire Northcoast is strategically located to connect to three ports (ports of Portsmouth, NH, Portland, ME and Boston at the Everett, MA intermodal terminal – deep water dock, rail and trucking – which is owned by Boston Sand & Gravel Company).

As detailed in the attached benefit-cost analysis, cost savings to shippers from the project are estimated to be \$28.4 million.

iii. Livability

Although this is a freight project, it will enhance and expand the availability of transportation choices through improvements to an existing freight railroad. The improved railroad will reduce truck traffic on NH 16, a highway that is one of the state's principal tourist routes

servicing the Lakes Region and White Mountains. NHDOT and the regional planning commissions along the corridor cooperated in an extensive Route 16 Corridor Study from 1994-1999, with the involvement of five separate working groups, numerous community groups, and considerable citizen input. A 1997 report on current conditions, *The Corridor Today*, recognized the importance of the rail line with the following statement: “Shipping sand and gravel by rail saves approximately 30,000 annual trips by large trucks which would otherwise add to traffic and pavement wear,” and found that the railroad corridor was an important component of the infrastructure that should be preserved. The existence of a freight railroad corridor in good repair will generate expanded intermodal opportunities and will connect industrial parks in the communities along the corridor, providing enhanced options for the movement of goods.

Completion of the project will enable the NHN to expand its shipment of propane, which in turn makes it available to distributors at a more attractive cost. Low-income homeowners now heating with expensive oil or electricity may be able to take advantage of programs to encourage conversion to more energy-efficient propane heating systems if competitively priced fuel is more widely available.

The State of New Hampshire’s Weatherization Program, funded with grants from the US Department of Energy, is designed to reduce energy use and costs in the homes of low-income residents by installing energy efficiency improvements. The Weatherization Program serves, free of charge, those low-income households that are most vulnerable to high-energy costs and don’t have the means to pay for cost-effective conservation improvements to their homes. Weatherization Program services include heating system repairs and the installation of high efficiency furnaces. Priority for the program funds is given to the elderly, disabled residents and households with younger children.

With limited access to natural gas in the state, propane heat (and hot water) is one of the main alternatives to oil heat (and hot water). Eastern Propane storage facilities are critical to the availability and price of propane. A competitive rail service in this rail corridor minimizes the cost of this fuel. The cost of the propane fuel is a factor in installing or converting to a propane heating and/or hot water system.

As indicated in the attached benefit-cost analysis, highway maintenance cost savings are estimated at \$6.8 million and congestion benefits on the highway system total \$6.4 million.

iv. Sustainability

It is estimated that the completion of this project will increase the railroad’s capacity from a current limit of 4,000 cars per year to its former average volume of approximately 7,000 cars per year, and would also allow for additional freight generated by new shippers that may

locate on the line. Total capacity of the railroad after these improvements would exceed 13,000 cars per year. The difference of 3,000 cars per year represents a significant gain by reducing energy use and emissions of carbon dioxide and pollutants. The attached benefit-cost analysis provides information on the reductions in energy use and positive impacts on carbon dioxide and air quality from the project, which will provide a total estimated emissions benefit of \$1.4 million. The Strafford County portion of the project area is in nonattainment for Clean Air Act standards, so the gains in air quality are significant.

v. Safety

The safety benefits of this project derive primarily from the continued and expanded ability of the railroad freight service to divert freight from trucks that travel on NH Route 16. Rail freight as a mode has a far lower crash rate per ton of freight moved than does trucking, and the fact that Route 16 has had a number of serious head-on crashes underscores the need to maintain and expand the rail alternative. NHDOT has installed rumble strips on Route 16 in response to the safety concerns. Traffic volumes on Route 16 in the project area ranged from 6000 to 11,000 vehicles per day in 2009. The reconstruction of two existing crossings, with signals, will improve safety for highway users at those locations.

Another safety benefit associated with the improvements in the infrastructure is to assure safe movement of the 500-600 propane cars annually on the NHN line from Rollinsford to Rochester. This project will also allow for the potential of safe propane transport for a new potential customer in Ossipee (an approximately 40 mile haul).

The project's safety benefits as measured in accident reduction, is estimated at \$2 million, explained in the attached benefit-cost analysis.

Benefit-Cost Results

HDR's Decision Economics group conducted the benefit-cost analysis for the NHN Rail Improvements Project using methods and parameters consistent with US Department of Transportation guidelines. All benefits and costs in the analysis are estimated in 2010 dollars. The valuation of benefits uses a number of assumptions that are required to produce monetized values for non-pecuniary benefits. The different components of time, for instance, are monetized by using a "value of time" that is assumed to be equivalent to the user's willingness to pay for "time savings" in transit. These, as with all other values used in the analysis, are taken from the United States Department of Transportation (USDOT) guidance on the preparation of TIGER applications. Where USDOT has not provided valuation guidance or a reference to guidance, standard industry practice has been applied. (See appendix for complete summary and backup information.)

Project Benefits: Five categories of benefit impacts were measured for this analysis: 1) shipper cost savings; 2) emission reductions; 3) pavement maintenance savings; 4) accident reductions; and 5) freight inventory costs. The freight inventory costs reflect the total estimated travel time of freight shipments. Since freight rail tends to be lower-cost but often longer travel time compared to truck, this impact actually works as a modest negative offsetting impact as the analysis captures the trade-offs between truck and rail modes.

Project Costs: Costs include the initial capital construction costs of \$2.33 million as well as operating and maintenance (O&M) costs of the NHN rail corridor upgrades. The results for the project are provided using the TIGER II grant recommended discount rate of 7 percent, as well as a discount rate of 3 percent to measure sensitivity. The benefit-cost ratio (BCR) at the 7 percent discount rate is 3.32 and an impressive 5.38 with a 3 percent discount rate. A complete discussion of the Benefit-Cost Analysis methodology is provided in the appendix.

Benefit-Cost Results Discount Rate 7%		Benefit-Cost Results Discount Rate 3%	
Costs		Costs	
Construction & Maintenance Costs	\$5,936,760	Construction & Maintenance Costs	\$5,936,760
Present Value of Total Costs	\$3,429,522	Present Value of Total Costs	\$4,441,355
Benefits		Benefits	
Emissions Benefits	\$1,402,000	Emissions Benefits	\$1,402,000
Shipper Cost Savings	\$28,388,372	Shipper Cost Savings	\$28,388,372
Freight Inventory Costs	(\$202,194)	Freight Inventory Costs	(\$202,194)
Congestion Relief	\$6,360,904	Congestion Relief	\$6,360,904
Accidents	\$2,021,062	Accidents	\$2,021,062
Highway Maintenance Savings	\$6,834,225	Highway Maintenance Savings	\$6,834,225
Total Benefits	\$44,804,369	Total Benefits	\$44,804,369
Present Value of Total Benefits	\$11,384,480	Present Value of Total Benefits	\$23,882,180
Net Present Value	\$7,954,958	Net Present Value	\$19,440,825
Benefit-Cost Ratio (BCR)	3.32	Benefit-Cost Ratio (BCR)	5.38

b. Job Creation and Economic Stimulus

Construction of this project is expected to take five months, or somewhat less than one construction season. The major tasks in the project will be production of ballast stone, replacement of ties, placement of ballast and surfacing, and crossing, culvert, and washout repair. The estimated total employment for these tasks will be 20,000 person-hours in construction employment. Given the complexity and scale of the work, contracted forces will be utilized for the construction work. Railroad contractors with specialized equipment will be retained.

Secondary Selection Criteria: d. Partnership

The New Hampshire Northcoast Railroad will provide the matching funds for this project. The railroad and the State of New Hampshire have worked in close partnership for many years to upgrade the railroad line for freight service, and will continue to do so in the future. NHDOT has provided both state and federal funds for past railroad improvement projects to initially bring this line to viability as a freight line capable of handling heavy cars. The State committed state capital (bond) funds, revolving loan funds, and Local Rail Freight Assistance funds from the FRA to the initial repair project on the line. The State has also underscored its commitment to the future use of this line, known as the Conway Branch, by purchasing the balance of the corridor owned by the Boston & Maine Corporation north of the NHN ownership in 2001. NHDOT as well as local communities also coordinate construction activities with the railroad as reconstruction of grade crossings takes place.

V. Project Readiness and NEPA

i. Project schedule: The project will be completed according to the following schedule (total days following grant award):

Grant agreement (90 days from grant award)

Funds accepted/budgeted, and railroad contract approved (150 days)

Order materials, contract with railroad subcontractors (180 days)

Construction underway (210 days)

Tie replacement complete (250 days)

Acton Ridge Road Grade Crossing (250 days)

Ballast placement and surfacing complete (310 days)

Washout Repair (310 days)

Upgrade 0.7 track miles to siding standards (340 days)

Somersworth grade crossing/Mill No. 1 (340 days)

Final completion (360 days)

- ii. Environmental Approvals:** The project consists of work on an existing railroad corridor to maintain and upgrade infrastructure in place. An FRA Categorical Exclusion Worksheet has been prepared and is attached. It is anticipated that the Worksheet will be submitted for approval within 30 days of grant award.
- iii. Legislative Approvals:** The project does not require legislative approval. Grant funds received that are not already in the state budget must be accepted by the Joint Legislative Fiscal Committee, and this approval is anticipated within 60 days of execution of the grant contract for this project, as shown in the schedule above.
- iv. State and Local Planning:** The project will be included in the State Transportation Improvement Program (STIP) following grant award. The STIP is amended several times during the fiscal year, and an amendment will be prepared to include the grant funds. The approval of a STIP amendment involves a public participation process including an opportunity to comment, and approval by regional planning commissions/metropolitan planning organizations.
- v. Technical Feasibility:** The proposed track infrastructure improvements are within the technical expertise of the NHN track crew and/or its subcontractors. NHN will retain an engineering firm(s) for the two grade crossings proposed under this project. As the state transportation agency, NHDOT has administered numerous grants from the Federal Transit Administration and Federal Railroad Administration, in addition to the Federal-Aid Highway program, and has the staff and technical expertise to administer the funds for this project.
- vi. Financial Feasibility:** NHN will appropriate the 20% matching fund dollars of \$367,352 in its 2011 budget (January 1, 2011 – December 31, 2011).

VI. Federal Wage Rate Certification

Attached

VII. Material Changes to Pre-Application

The pre-application properly described the boundaries of the rail line running through Lebanon, ME. Although a small portion (less than 1 mile) of the railroad corridor passes

through Lebanon, ME, this segment is not included in the improvements for the proposed project.

New Hampshire Northcoast Inspection Photos



Damaged Ballast



Tie Condition



Somersworth Mill Crossing



Acton Ridge Road Crossing



Track North of Engine House